



EFFECT OF 1% TTBLs ON INDUSTRIAL PASTE AND PLATE CURING — 1ST SAMPLE

CONTROL SAMPLES					
SAMPLE	TRIAL	A-PBO (TETRA)	B-PBO (ORTHO)	TETRABASIC	TRIBASIC
PASTE AT END OF MIXING	1	58.0	2.6	0.0	39.4
	2	51.1	7.9	0.0	40.9
	3	59.4	2.2	1.2	37.2
	4	66.4	2.1	0.0	31.5
	5	50.2	1.1	2.4	46.3
	AVG	57.0	3.2	0.7	39.1
PASTE PLATE AT END OF TUNNEL DRYER	1	66.7	1.9	0.0	31.4
	2	59.2	8.5	5.7	26.6
	3	55.9	5.5	10.6	28.1
	4	61.8	4.8	2.1	31.3
	5	60.8	3.2	6.9	29.1
	AVG	60.9	4.8	5.1	29.3
PLATES AFTER 3 HOURS CURING	1	57.5	9.7	0.5	32.3
	2	61.2	10.7	0.0	28.8
	3	60.7	8.7	2.1	28.5
	4	60.4	9.8	1.0	28.7
	5	58.7	5.3	2.9	33.1
	AVG	59.7	8.8	1.3	30.3
PLATES AFTER 6 HOURS CURING	1	52.0	4.4	1.8	41.8
	2	57.1	9.1	0.0	33.7
	3	59.6	2.4	0.9	37.1
	4	54.4	8.2	1.6	35.8
	5	57.2	7.5	2.7	32.6
	AVG	56.1	6.3	1.4	36.2
PLATES AFTER 9 HOURS CURING	1	52.6	4.3	1.5	41.6
	2	67.7	2.3	1.9	28.2
	3	63.6	6.9	1.9	27.6
	4	60.2	10.4	2.3	27.2
	5	61.6	3.2	1.9	33.3
	AVG	61.1	5.4	1.9	31.6
PLATES AFTER 12/13 HOURS CURING	1	30.2	1.7	68.1	0.0
	2	59.1	10.3	4.6	26.0
	3	59.8	2.1	14.2	23.9
	4	64.9	2.3	11.0	21.8
	5	53.9	4.3	9.3	32.4
	AVG	53.6	4.8	21.4	26.0

FIG. 2B

EFFECT OF 1% TTBLs ON INDUSTRIAL PASTE AND PLATE CURING — 1ST SAMPLE

EXPERIMENTAL SAMPLES					
SAMPLE	TRIAL	A-PBO (TETRA)	B-PBO (ORTHO)	TETRABASIC	TRIBASIC
PASTE AT END OF MIXING	1	38.5	0.0	51.7	9.8
	2	34.1	0.7	57.7	7.5
	3	36.1	0.0	58.3	5.5
	4	40.2	0.0	55.1	4.7
	5	34.5	1.2	59.5	4.8
	AVG	36.7	0.4	56.5	6.5
PASTE PLATE AT END OF TUNNEL DRYER	1	81.9	8.1	10.1	0.0
	2	45.2	2.1	27.4	25.3
	3	44.1	1.6	29.9	23.9
	4	43.8	1.2	43.0	11.9
	5	48.6	3.4	19.5	28.5
	AVG	52.7	3.3	26.0	17.9
PLATES AFTER 3 HOURS CURING	1	26.2	2.2	71.6	0.0
	2	20.8	4.3	71.5	3.4
	3	34.6	3.4	57.4	4.6
	4	24.1	3.4	66.7	5.8
	5	36.9	1.9	51.3	10.0
	AVG	28.5	3.0	63.7	4.8
PLATES AFTER 6 HOURS CURING	1	25.3	2.9	71.8	0.0
	2	19.4	5.5	72.6	2.5
	3	31.0	2.0	67.0	0.0
	4	28.1	1.4	66.8	3.6
	5	32.6	1.7	65.6	0.0
	AVG	27.3	2.7	68.8	1.2
PLATES AFTER 9 HOURS CURING	1	26.7	4.5	61.7	7.0
	2	27.3	1.5	67.9	3.4
	3	31.0	1.8	67.2	0.0
	4	30.2	0.8	69.0	0.0
	5	29.0	1.6	65.8	3.5
	AVG	28.8	2.0	66.3	2.8
PLATES AFTER 12/13 HOURS CURING	1	29.5	1.0	69.5	0.0
	2	18.9	2.5	75.3	3.3
	3	32.5	1.5	65.9	0.0
	4	28.8	0.7	67.1	3.3
	5	30.9	1.0	68.1	0.0
	AVG	28.1	1.3	69.2	1.3

FIG. 3A

EFFECT OF 1% TTBLs ON INDUSTRIAL PASTE AND PLATE CURING — 2ND SAMPLE

CONTROL SAMPLE						
SAMPLE	SAMPLE NO.	PB	A-PBO (TETRA)	B-PBO (ORTHO)	TETRABASIC	TRIBASIC
PASTE AT END OF MIXING		13.8	25.8	5.1	5.1	50.3
	AVG	13.8	25.8	5.1	5.1	50.3
PASTED PLATE AT END OF TUNNEL		15.6	28.2	2.4	10.6	43.3
	AVG	15.6	28.2	2.4	10.6	43.3
FULL RACK IN CHAMBER		16.5	28.5	13.8	0.0	41.2
	AVG	16.5	28.5	13.8	0.0	41.2
AFTER 2 HOURS IN CHAMBER		17.1	27.7	8.0	2.8	44.4
	AVG	17.1	27.7	8.0	2.8	44.4
AFTER 4 HOURS IN CHAMBER		14.6	22.6	3.1	16.2	43.5
	AVG	14.6	22.6	3.1	16.2	43.5
AFTER 6.5 HOURS IN CHAMBER		17.2	24.8	2.4	14.9	40.7
	AVG	17.2	24.8	2.4	14.9	40.7
AFTER 8.6 HOURS IN CHAMBER		18.6	19.8	16.1	3.3	42.2
	AVG	18.6	19.8	16.1	3.3	42.2
AFTER 12.5 HOURS IN CHAMBER		12.0	17.5	4	29	37.4
	AVG	12.0	17.5	4	29	37.4
AFTER 16.5 HOURS IN CHAMBER		3.2	14.5	1.1	59.6	21.6
	AVG	3.2	14.5	1.1	59.6	21.6
AFTER 20.5 HOURS IN CHAMBER		4.7	25	14.85	43.5	25.1
		0	15	1.1	75.3	8.6
	AVG	2.35	20	7.975	59.4	16.85
AFTER 24.5 HOURS IN CHAMBER		0	15	1.1	75.3	8.6
	AVG	0	15	1.1	75.3	8.6
AFTER 28.5 HOURS IN CHAMBER		0	15.4	1.3	76.8	6.6
	AVG	0	15.4	1.3	76.8	6.6

FIG. 3B

EFFECT OF 1% TTBLs ON INDUSTRIAL PASTE AND PLATE CURING — 2ND SAMPLE

EXPERIMENTAL SAMPLES						
SAMPLE	SAMPLE NO.	PB	A-PBO (TETRA)	B-PBO (ORTHO)	TETRABASIC	TRIBASIC
PASTE AT END OF MIXING		11.4	10.9	2.7	53.2	21.9
		17.8	6.7	0.8	69.1	5.6
		18.7	6.3	0.0	50.0	25.0
	AVG	15.97	8.0	1.2	57.4	17.5
PASTED PLATE AT END OF TUNNEL		8.2	13.0	3.2	54.7	20.9
		16.6	8.6	0.9	57.3	16.6
		19.8	4.7	0.0	67.4	8.1
	AVG	14.87	8.8	1.4	59.8	15.2
FULL RACK IN CHAMBER		8.2	13.5	0.9	62.3	15.2
		18.4	6.0	0.4	56.1	19.1
		18.3	9.2	0.8	66.2	5.5
	AVG	14.97	9.6	0.7	61.5	13.3
AFTER 2 HOURS IN CHAMBER		9	12.8	1.1	77.1	0.0
		12.6	5.7	2.7	70.6	8.5
		19.2	5.8	1.3	64.7	9.0
	AVG	13.60	8.1	1.7	70.8	5.8
AFTER 4 HOURS IN CHAMBER		7.3	6.9	1.0	73.0	11.8
		12.2	4.4	1.4	68.2	13.9
		6.5	9.6	1.0	75.5	7.4
	AVG	8.67	7.0	1.1	72.2	11.0
AFTER 6 HOURS IN CHAMBER		7.8	10.5	1.1	80.2	0.3
		11.9	2.7	1.4	70.0	14.0
		7.3	3.9	2.0	74.1	12.7
	AVG	9	5.7	1.5	74.8	9.0
AFTER 8 HOURS IN CHAMBER		6.4	5.2	1.6	73	13.8
		9.4	7.9	1.6	72.4	8.7
	AVG	7.9	6.55	1.6	72.7	11.25
AFTER 10 HOURS IN CHAMBER		2.4	5.9	2.2	80	9.5
	AVG	2.4	5.9	2.2	80	9.5
AFTER 12 HOURS IN CHAMBER		1.9	3.4	2.4	83.7	8.5
		1.7	10.5	1.7	80.3	5.8
	AVG	1.8	6.95	2.05	82	7.15
AFTER 14 HOURS IN CHAMBER		7.4	8.4	1.2	72.4	10.6
	AVG	7.4	8.4	1.2	72.4	10.6
AFTER 16 HOURS IN CHAMBER		1.2	5.6	2	83.4	7.7
		13.1	8.4	1.3	72.4	4.8
	AVG	7.15	7.00	1.65	77.90	6.25
AFTER 18 HOURS IN CHAMBER		1.3	4.4	3.3	83.7	7.3
		0	7.2	0	86.5	6.4
	AVG	0.65	5.8	1.65	85.1	6.85
AFTER 20 HOURS IN CHAMBER		1.7	6.9	2.3	81.1	7.9
		0.8	10.8	1.9	86.5	0
	AVG	1.05	7.83	1.95	84.23	4.92
AFTER 22 HOURS IN CHAMBER		1.3	4.4	3.3	83.7	7.3
	AVG	1.3	4.4	3.3	83.7	7.3
AFTER 24 HOURS IN CHAMBER		1.5	11.8	2.3	84.5	0
		1.3	8.7	2.4	80.3	7.3
	AVG	1.4	10.25	2.35	82.4	3.65
AFTER 26 HOURS IN CHAMBER		0.7	6.4	2.1	89.7	1.1
	AVG	0.7	6.4	2.1	89.7	1.1
AFTER 28 HOURS IN CHAMBER		0.6	11.5	1.9	86	0
		1.1	6	2.4	89.2	1.4
	AVG	0.85	8.75	2.15	87.6	0.7

FIG. 6A EFFECT OF 1% TTBLs ON AUTOMOTIVE PASTE AND PLATE CURING — THIRD SAMPLE

CONTROL SAMPLE						
SAMPLE	TRIAL	PB	A-PBO (TETRA)	B-PBO (ORTHO)	TETRABASIC	TRIBASIC
PASTE AT END OF MIXING	41	9.3	62.3	0.0	0.0	26.6
	40	3.1	72.5	1.4	0.0	23.1
	AVG	6.2	67.4	0.7	0.0	24.9
PASTED PLATE AT END OF TUNNEL DRYER	37	5.4	60.4	0.0	0.0	34.2
	38	18.7	49.3	0.7	0.0	31.3
	39	10.8	58.3	0.5	0.0	30.4
	AVG	11.63	56.0	0.4	0.0	32.0
TWO HOURS AFTER LOADING CURING CHAMBER						
	AVG					
SIX HOURS AFTER LOADING CURING CHAMBER	1		52.0	4.4	1.8	41.8
	2		57.1	9.1	0.0	33.7
	3		59.6	2.4	0.9	37.1
	4		54.4	8.2	1.6	35.8
	5		57.2	7.5	2.7	32.6
	AVG		56.1	6.3	1.4	36.2
8 HOURS AFTER LOADING CURING CHAMBER	12	7	63.1	1.0	0.0	28.8
	17	8.3	60.5	5.5	0.0	26.1
	18	6.8	59.1	5.1	0.0	28.9
	4		60.2	10.4	2.3	27.2
	5		61.6	3.2	1.9	33.3
	AVG	7.4	60.9	5.0	0.8	28.9
18 HOURS AFTER LOADING CURING CHAMBER	21	8.1	57.9	2.8	7.3	24.0
	23	7.5	58.2	3.6	7.9	24.0
	24	7.7	67.7	0.0	0.0	24.6
	AVG	7.8	63.0	1.8	4.0	24.3
24 HOURS AFTER LOADING CURING CHAMBER	29	5.1	44.4	0	35.7	14.8
	30	2.5	62.6	1	12.1	21.8
	AVG	3.8	53.5	0.5	23.9	18.3
END OF CURE	31	0	53.2	0.3	31.96	14.7
	32	0.8	50.7	0	36.2	12.3
	AVG	0.4	51.95	0.15	34.05	13.5

FIG. 6B EFFECT OF 1% TTBLs ON AUTOMOTIVE PASTE AND PLATE CURING — THIRD SAMPLE

EXPERIMENTAL SAMPLE						
SAMPLE	TRIAL	PB	A-PBO (TETRA)	B-PBO (ORTHO)	TETRABASIC	TRIBASIC
PASTE AT END OF MIXING	1	6.7	51.0	0.0	19.8	23.1
	2	14.9	48.3	0.9	12.2	23.7
	AVG	10.8	49.7	0.5	16.0	23.4
PASTED PLATE AT END OF TUNNEL DRYER	3	10.3	49.3	0.5	14.3	25.8
	4	8	47.7	4.1	15.9	24.3
	5	17.2	43.0	0.6	14.3	24.9
	42	13.8		1.2	21.4	22.1
	AVG	12.3	46.7	1.6	16.5	24.3
TWO HOURS AFTER LOADING CURING CHAMBER	6	12.9	43.3	0.6	21.8	21.3
	7	14.4	44.3	4.8	17.8	19.1
	8	12.3	49.2	1.4	18.4	18.8
	9	10.2	45.3	0.4	24.1	20.1
	AVG	12.4	45.5	1.8	20.5	19.8
SIX HOURS AFTER LOADING CURING CHAMBER	10	4.4	25.2	4.4	60.7	5.3
	AVG	4.4	25.2	4.4	60.7	5.3
8 HOURS AFTER LOADING CURING CHAMBER	11	6.5	21.6	1.0	66.3	4.5
	13	1.9	26.8	1.8	64.3	5.2
	14	4	29.0	2.5	56.9	7.6
	15	0	29.6	1.9	62.6	5.8
	16	3.9	24.8	1.9	63.7	5.7
	AVG	4.1	26.4	1.8	62.8	5.8
18 HOURS AFTER LOADING CURING CHAMBER	19	5.6	21.9	2.8	66.1	3.7
	20	5.3	22.3	3.4	64.3	4.3
	22	6.1	24.8	0.9	64.7	3.4
		3.7	25.1	2.3	68.9	0.0
	AVG	5.7	23.53	2.35	66.0	2.9
24 HOURS AFTER LOADING CURING CHAMBER	25	1.3	24.5	0.8	69.9	3.5
	26	1.5	25.5	0	69.3	3.6
	27	2.6	28	1.1	61.8	6.5
	28	2.9	25.8	0	67.4	3.8
	AVG	2.075	25.95	0.475	67.1	4.35
END OF CURE	33	0	27.3	2.5	67.2	3
	34	3	28.4	1.3	64	3.2
	35	0.6	27.6	0	68.6	3.2
	36	0.6	26	3.1	64	6.2
	AVG	1.05	27.325	1.725	65.95	3.9